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IS 8149 (1994, Reaffirmed 2010): Functional Requirements for Twin CO2 Fire Extinguisher (Trolley Mounted) (First Revision). UDC 615.845.4

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"Knowledge is such a treasure which cannot be stolen"

REAFFIRMED
/1999

IS 8149 : 1994

REAFFIRMED
2010

भारतीय मानक

दोहरे कार्बनडाइआक्साइड अग्नि शामक (ट्राली अरोपित) की कार्यकारी अपेक्षाएँ

(पहला पुनरीक्षण)

Indian Standard

FUNCTIONAL REQUIREMENTS FOR TWIN CO_2 FIRE EXTINGUISHER (TROLLEY MOUNTED)

(First Revision)

UDC 615·845·4

© BIS 1994

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

February 1994

Price Group 2

Fire Fighting Sectional Committee, CED 22

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Fire Fighting Sectional Committee had been approved by the Civil Engineering Division Council.

The requirements of the CO_2 fire extinguishers up to 22·5 kg as single cylinder are covered under IS 2878 : 1986 'Specification for fire extinguisher, carbon dioxide type (portable and trolley mounted)'. For easy transportation and maintenance thin cylinders are also used. This standard therefore covers the requirements of trolley mounted CO_2 fire extinguishers of twin cylinders.

In some cases it will be necessary to have a fully charged dry chemical powder fire extinguisher along with CO_2 or Halon cylinders.

This standard was first published in 1976. This revision includes the alternate provision of Halon type fire extinguishers along with dry powder fire extinguishers.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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AMENDMENT NO. 2 FEBRUARY 2010
TO
IS 8149 : 1994 FUNCTIONAL REQUIREMENTS FOR TWIN CO_2 FIRE EXTINGUISHER (TROLLEY MOUNTED)

(First Revision)

(*Page* 2, *clause* **6.2**) — Substitute the following for the existing:

"Each extinguisher body shall be painted either with epoxy powder coating or synthetic enamel paint. The shade shall be 'Fire Red' or 'Post Office Red' conforming to Shades No. 536 or 538 of IS 5.

NOTES

1 Whenever epoxy powder coating is applied on the external surface of mild steel body for anti-corrosive treatment, synthetic enamel paint coating is not required.

2 The body of extinguisher shall be of good finish, clear of all burrs and sharp edges."

(CED 22)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 1 APRIL 2005
TO
IS 8149 : 1994 FUNCTIONAL REQUIREMENTS FOR TWIN CO_2 FIRE EXTINGUISHER (TROLLEY MOUNTED)

(First Revision)

(*Foreword, para* 4) — Substitute 'halo-carbon clean agent' *for* 'Halon'.

(*Page* 2, *clause* **4.7**) — Substitute the following for the existing:

'1 kg Portable fire extinguisher, ABC type Dry Powder (stored pressure) conforming to IS 13849 or halo-carbon clean agents as per IS 15493.'

(*Page* 3, *Annex A*) — Insert the reference of the following standards at the appropriate place:

IS 13849 : 1993	Specification for portable fire extinguisher dry powder type (constant pressure)
IS 15493 : 2004	Gaseous fire extinguishing systems — General requirements

(CED 22)

Reprography Unit, BIS, New Delhi, India

Indian Standard

FUNCTIONAL REQUIREMENTS FOR TWIN CO_2 FIRE EXTINGUISHER (TROLLEY MOUNTED)

(First Revision)

1 SCOPE

This standard covers the requirements of twin CO_2 fire extinguisher (trolley mounted).

2 REFERENCES

The Indian Standards listed in Annex A are necessary adjuncts to this standard.

3 MATERIAL

3.1 Cylinder

The CO_2 extinguisher body (cylinder) shall conform to IS 7285 : 1988 or cylinder approved by the Chief Controller of explosives.

3.2 Valve

The material to be used for grip valve, valve head, manifold, nozzle shall be of brass conforming to grade FLB of IS 6912 : 1985.

3.3 Applicator Tubes

Applicator tube shall be manufactured out of light alloy tube conforming to IS 617 : 1975.

3.4 Hose

It shall be high pressure type having a minimum bursting pressure of 300 kg/cm^2.

3.5 Discharge Horn

This shall be of material which is non-conductor of electricity like fibre or any other similar material.

3.6 Washer

Washer for manifold and adaptor shall be made from fibre.

3.7 Trolley

M. S. Section shall be used for fabrication of trolley.

4 CONSTRUCTION

4.1 The extinguisher shall comprise of two charged 6-7 kg CO_2 cylinders and mounted on the trolley. The cylinder shall be charged with liquid CO_2 gas in accordance with IS 3710 : 1978. The cylinder shall be fitted with valve head and dip tube along with a piercing head incorporating a lever arm and cutter mechanism (Complete with safety pin and chain) for piercing the hermetic sealing. The discharge outlet connection of the valve heads shall be connected to a common manifold. Outlet connection shall be provided on the manifold to receive a 9·5 mm, 12 mm nominal bore length hose fitted with union connections. The other end of the hose shall be connected to a tee connection fitted to the base of telescopic applicator tube, lower portion of which shall be provided with a lever type of press control valve and handle. The other end of the applicator tube shall terminate in discharge nozzle and deflector plate. This discharge nozzle shall be arranged to receive a discharge horn which when not in use shall be mounted on the base of trolley with the clamp.

4.2 The applicator shall comprise of telescope tube complete with lever type grip valve at the inlet end. At the discharge end the applicator should be connected to elbow and discharge horn with nozzle. The construction and design of the whole assembly shall be such as to give rigidity with when coupled with lightness in weight to facilitate handling in the extended position. When extended the applicator shall be (3·5 ± 0·25) metres overall from the centre of the discharge nozzle to the base of the grip control valve. The base of applicator tube should be screwed to the grip valve and this grip valve should be screwed to tee piece: one end of tee piece to suit grip valve and other end to take hose with connection and third end to form steam for locating in internal diameter of socket on chasis frame. The opposite end of the telescopic applicator shall be fitted with deflector plate terminating in two concentric bosses, one to take the discharge horn or cone, the other for nozzle. A gland and stop will be provided at the limit of travel on the telescopic tube, the gland to be gas-tight against full pressure of the cylinders. The telescopic action shall be capable of extension by gas pressure or by hand and knurled ring shall be incorporated to lock the tube in extended position. The closing of the telescopic action shall be by hand. Insulating grips shall be provided at convenient points on the outer tube. The valve shall be operated by spring loaded lever. Pressure on the lever against the springs shall open the valve, on the release of the pressure, valve shall automatically close. The valve shall operate and show no sign of leakage when subject to hydrostatic pressure of 300 kgf/cm^2. A safety vent shall be provided in the base sealed with suitable gauge, copper bursting disc in accordance with IS 3224 : 1979 or phospher bronze. The operating lever grip shall be on the outlet side of the lever type grip valve.

4.3 The valve head shall comply with IS 3224 : 1979. It shall embody a lever operated spring loaded device for piercing the sealing disc. It shall be screwed in conformity with IS 3224 : 1979 to suit the cylinder neck. A filling plug with a safety bursting disc in accordance with IS 3224 : 1979 shall be incorporated in the adaptor design. Each valve head lever shall be provided with a safety pin and chain which shall be of approved design.

4.4 The cylinder shall be connected to the common manifold. One discharge outlet shall be provided on the manifold for connecting the hose assembly. The manifold inlet connection with cylinders are connected shall be fitted with non-return ball valves. The manifold shall be subjected to hydrostatic test pressure 300 kgf/cm^2 without leakage, distortion or failure.

4.5 The trolley shall be fabricated from M.S. Rolled sections and shall be of welded construction. The frame work shall be provided to receive two cylinders with clamps and brackets to receive applicator tube with discharge hose. It should be provided with M. S. Axle and two rubber tyre wheels with bush bearing. The wheel shall be not less than 28 cm overall diameter with bush bearing and cushion rubber tyre. The wheel centre shall be (50 ± 2·5) cm. The length of the trolley shall be not less than 140 cm.

4.6 The nozzle shall be applicator (75 ± 5) mm overall length, (19 ± 1) mm internal dia with closed spherical end with six discharge orifices with (2 ± 1) mm wide and (2·5 ± 0·5) cm long to give forceful discharge of contents of both cylinders in not less than 45 seconds and complete discharge in not more than 160 seconds. The inlet to the nozzle shall be screwed for a minimum length of 14 mm and shall be hexagonal externally.

4.7 One dry chemical powder 2 kg capacity fire cylinder conforming to IS 2171 : 1985 or BCF 1·25 kg capacity conforming to IS 11108 : 1984 shall be fitted on trolley.

5 WORKMANSHIP

5.1 All castings and hot pressing shall be clean and sound free from porosity or any other imperfections.

5.2 Flash or die marks shall be carefully removed to leave a clean and neat appearance.

5.3 All machinery requirements shall be in accordance with IS 3073 : 1967. All burs and sharp edges should be removed and smooth finished.

6 PAINTING AND MARKING

6.1 Prior to painting, all surfaces shall be thoroughly cleaned and free from rust, scale and grease and reduced to a smooth and even surface.

6.2 With the exception of valve heads, applicator tubes and working parts, the extinguishers shall be painted with 'Fire red' conforming to Shade No. 536 of IS 5 : 1978. The paint shall conform to IS 2932 : 1974.

6.3 Operation instructions and other marking shall be transferred on an instruction plate.

6.4 Further marking to facilitate filling or recharging shall be stamped on the cylinder head as follows:

a) Empty weight of cylinder (to include valve and syphon tube screwed into nick),

b) Filled weight of cylinder with CO_2 gas, and

c) In addition each cylinder shall be provided with a record label which shall be marked as follows:

   i) Serial number and identification of manufacturer and year of manufacture.

   ii) Test pressure and date of the hydrostatic test.

ANNEX A

(*Clause* 2)

LIST OF INDIAN STANDARDS REFERRED

IS No.	*Title*
5 : 1978	Colours for ready mixed paints and enamels (*third revision*)
617 : 1975	Aluminium and aluminium alloys ingots and castings for general engineering purposes (*second revision*)
2171 : 1985	Portable fire extinguishers, dry powder (cartridge type) (*third revision*)
2932 : 1974	Enamel synthetic exterior (a) undercoating (b) finishing (*first revision*)
3073 : 1967	Assessment of surface roughness
3224 : 1979	Valve fittings for compressed gas cylinders excluding liquified petroleum gas (LPG) cylinders (*second revision*)
3710 : 1978	Filling ratios for low pressure liquefiable gas (*first revision*)
6912 : 1985	Copper and copper alloy forging stock and forgings (*first revision*)
7285 : 1988	Seamless manganese steel cylinders for permanent and high pressure liquefiable gases (*second revision*)
11108 : 1984	Portable fire extinguishers halons-1211 type

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Fire Fighting Sectional Committee, CED 22

Chairman	*Representing*
Fire Adviser	Ministry of Home Affairs
Members	
Asstt Inspector General (RPSF)	Ministry of Railways
Asstt Security Officer (*Alternate*)	
Shri S. N. Chakraborty	Tariff Advisory Committee, Madras
Shri B. L. Choudhry	Oil and Natural Gas Commission, Dehradun
Shri B. K. Sippy (*Alternate*)	
Shri S. M. Desai	Eureka Firetech Pvt Ltd, Bombay
Shri D. P. Dhatrak	Urban Development Department, Govt of Maharashtra, Bombay
Shri S. K. Dheri	Municipal Corporation of Delhi, Delhi
Shri R. C. Sharma (*Alternate*)	
Shri Ramesh R. Dhoblay	Bhabha Atomic Research Centre (Fire Service), Bombay
Director	Home Department (Fire Service), Govt of Tamil Nadu
Deputy Director (*Alternate*)	
Director of Equipment	National Airport Authority, New Delhi
Senior Fire Officer (*Alternate*)	
Director Gen. of Fire Service	Home (Police Department) Govt of Andhra Pradesh, Hyderabad
Deputy Director (*Alternate*)	
Shri C. P. Gosain	CPWD (Electrical), New Delhi
Shri P. N. Ghosh	In personal capacity (*J-1916 Chitranjan Park*), New Delhi
Shri J. S. Jamshedji	Steelage Industries Ltd, Bombay
Shri C. Gnanaraj (*Alternate*)	
Maj Gen B. S. Kataria	Ministry of Defence (DIFR)
Shri A.K. Suri (*Alternate*)	
Shri P. Khanna	Jay Shree Textiles & Industries, Rishra
Shri D. J. Kulkarni	Municipal Corporation of Greater Bombay (Bombay Fire Brigade), Bombay
Shri S. N. Kundu	Fire & Safety Appliances Co, Calcutta
Managing Director	Avon Services (Production and Agencies) Pvt Ltd, Bombay
Technical Executive (*Alternate*)	
Shri G. B. Menon	In personal capacity (*C-231 Samachar Apartments, Mayur Vihar, Phase-I*), New Delhi
Shri R.K. Misra	Steel Authority of India (Bokaro Steel Plant), New Delhi
Shri Suresh Babu, V. (*Alternate*)	

(*Continued on page* 4)

(*Continued from page* 3)

Members	*Representing*
Shri P. N. Panchal	Central Industrial Security Force, Ministry of Home Affairs
Asstt Inspector Gen (Fire) (*Alternate*)	
Shri B. Pathak	West Bengal Fire Services, Calcutta
President	The Institution of Fire Engineers (India), New Delhi
General Security (*Alternate*)	
Shri R. R. Rao	Ministry of Defence (DGI)
Col V. R. Banahatti (*Alternate*)	
Shri Harish Salot	Vijay Fire Protection System Pvt Ltd, Bombay
Shri U. Sen	Directorate General of Technical Development, New Delhi
Shri P. H. Sethna	Kooverji Devshi & Co Pvt Ltd, Bombay
Shri N. T. Panjwani (*Alternate*)	
Shri B. J. Shah	Newage Industries, Gujarat
Shri A. M. Shah (*Alternate*)	
Shri Ashok Sharma	Mathar & Platt (India) Ltd, Bombay
Shri A. K. Nandi (*Alternate*)	
Shri R. C. Sharma	Directorate General of Supplies and Disposals, New Delhi
Dr T. P. Sharma	Central Building Research Institute (CSIR), Roorkee
Dr A. K. Gupta (*Alternate*)	
Shri Sunil Das	Metallurgical & Engineering Consultants (India) Ltd, Ranchi
Shri M. C. P. Sinha (*Alternate*)	
Shri Tarit Sur	Surex Production & Sales Pvt Ltd, Calcutta
Shri D. Neogi (*Alternate*)	
Shri J. N. Vakil	Tariff Advisory Committee, Bombay
Shri K. Ravi (*Alternate*)	
Shri T. Yogeswara	Steel Authority of India Ltd (Rourkela Steel Plant), Rourkela
Shri John Takey (*Alternate*)	
Shri J. Venkataraman, Director (Civ Engg)	Director General, BIS (*Ex-officio Member*)

Member-Secretary
Shri Hamant Kumar
Joint Director (Civ Engg), BIS

Fire Fighting Equipments Subcommittee, CED 22 : 2

Convener	
Shri G. B. Menon	In personal capacity (*C-231 Samachar Apartments Mayur Vihar Phase-1*), Delhi

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Shri C. V. Ramachandran (*Alternate*)	
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Director	Ministry of Defence (R & D), New Delhi
Shri A. K. Suri (*Alternate*)	
Shri S. K. Dheri	Municipal Corporation of Delhi, Delhi
Shri Surinder Kumar (*Alternate*)	
Fire Adviser	Ministry of Home Affairs, New Delhi
Shri C. Gnanaraj	Stealage Industries Ltd, Bombay
Shri P. K. John	Directorate of Fire Services, Govt of Goa
Shri D. J. Kulkarni	Municipal Corporation of Greater Bombay, Bombay
Shri P. N. Panchal	Central Industrial Security Force (Ministry of Home Affairs), New Delhi
President	The Institution of Fire Engineers (India), New Delhi
General Secretary (*Alternate*)	
Shri K. Ravi	TAC, Bombay
Shri O. T. Gurkha (*Alternate*)	
Shri H. M. Sabadra	K. V. Chemicals, Bombay
Shri Rajesh Sabadra (*Alternate*)	
Shri Harish, Salot	Vijay Fire Protection Systems Pvt Ltd, Bombay
Shri Ketan K. Salot (*Alternate*)	
Shri P. H. Sethna	Kooverji Devshi & Co Pvt Ltd, Bombay
Shri N. T. Panjwani (*Alternate*)	
Shri Jitendra Shah	Safex Fire Services, Bombay
Shri J. K. Shah	Pater Autokits & Pvt Ltd, Bombay
Shri Tarit Sur	Surex Production & Sales Pvt Ltd, Calcutta